BRAINS IMAGEBANK

Edinburgh Imaging
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THE UNIVERSITY OF EDINBURGH

TOO RICH TO KEEP

SHARING THE WEALTH OF CLINICAL DATA TO ENHANCE PATIENT TREATMENTS

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Monday 1st of August - 4.15/4.22 pm

BRAIN TUMOUR IMAGING DATA

- My research is in developing new MRI protocols and methods to enhance brain tumour surgery (i) decision (ii) planning and (iii) execution/outcome.

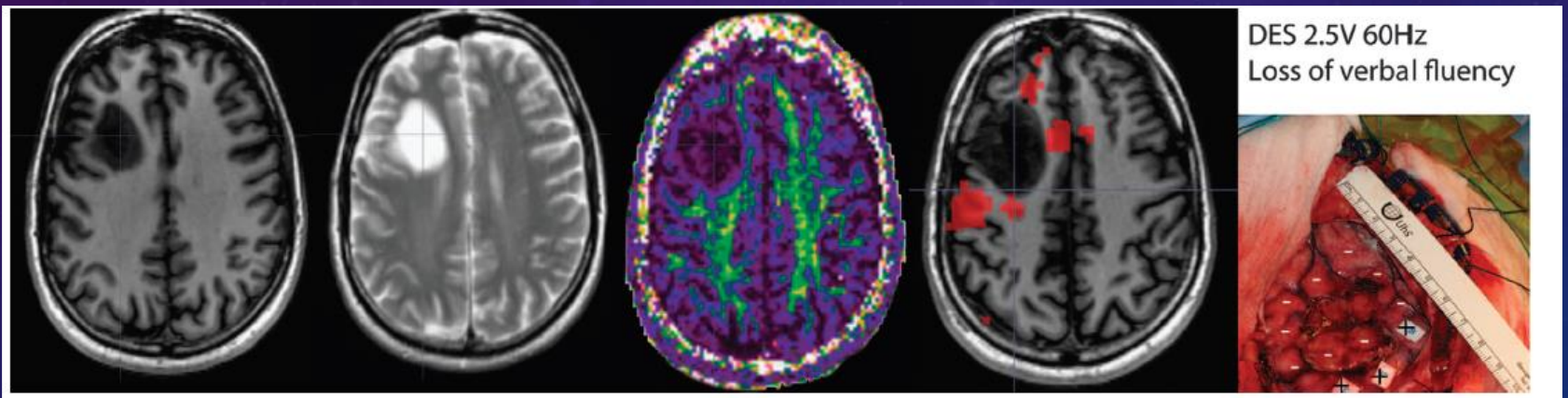

Figure 2. From left to right, the first 3 images show structural data: T1-weighted, T2-weighted, Diffusion weighted (Fractional Anisotropy map here) images. These data are complemented by functional BOLD imaging and Direct Electrical Stimulation.

We collected a very rich dataset with many MRI sequences, but also surgical and behavioural measures

www.nature.com/scientificdata

SCIENTIFIC DATA

OPEN

SUBJECT CATEGORIES

» Outcomes research

» Neurology

A structural and functional magnetic resonance imaging dataset of brain tumour patients

Cyril R. Pernet[1,2], Krzysztof J. Gorgolewski[3], Dominic Job[1,2], David Rodriguez[1,2], Ian Whittle[1,2,4] & Joanna Wardlaw[1,2]

Data Citation

1. Pernet, C., Gorgolewski, K. & Whittle, I. *UK Data Archive*. http://dx.doi.org/10.5255/UKDA-SN-851861 (2016).

Acknowledgements

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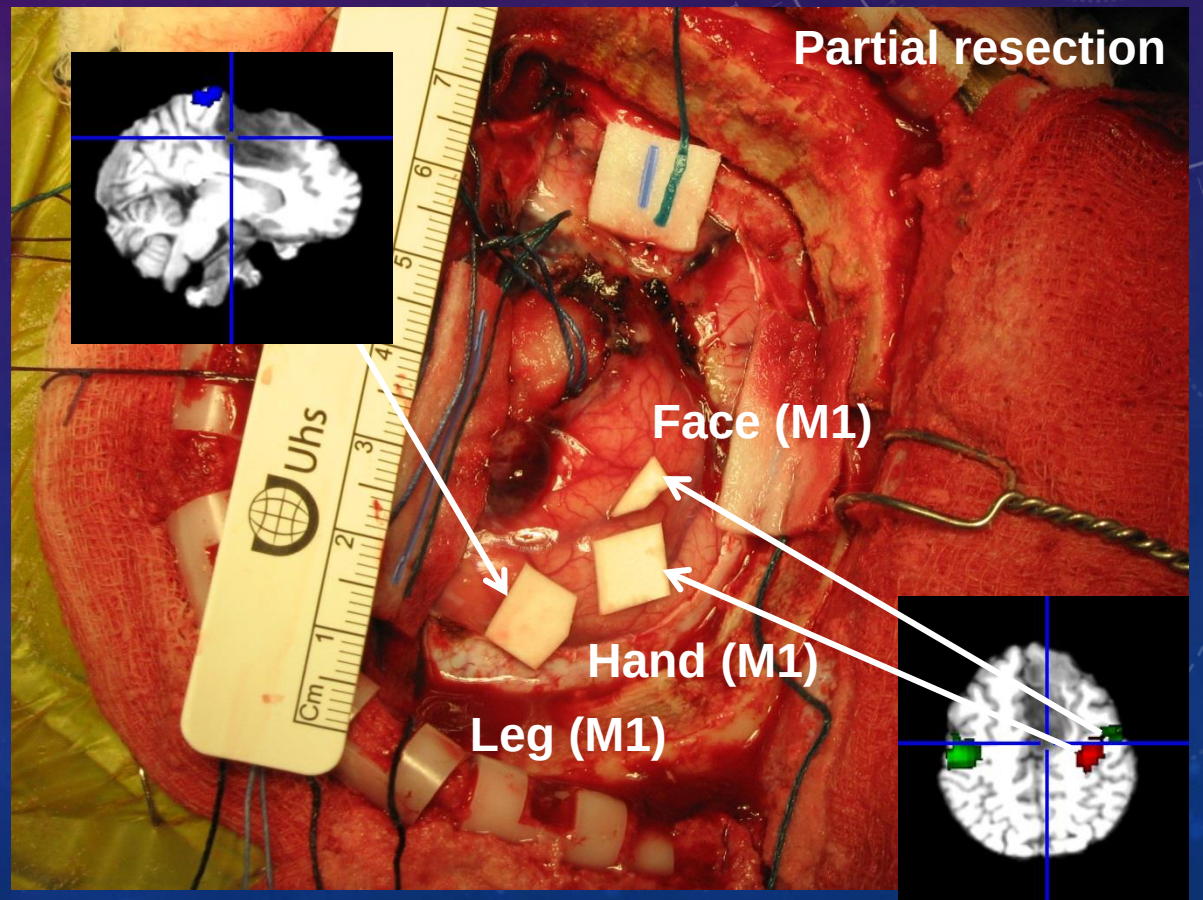
WHAT I COULD DO

- New methods to validate functional imaging data protocol = how to map active areas involved in motor behaviour and thinking which are near tumours
- New methods to analyse functional imaging evoked responses



SINCE I SHARED MY DATA

- People in Linkoping University, Sweden (Dr Anders Eklund) have used the diffusion images to look at white matter track fibers.
- They use these images to test a software in the planning of gamma radiation treatment
- The goal is to optimize gamma radiation to minimize damage to the nearby white matter track

→ I couldn't do that

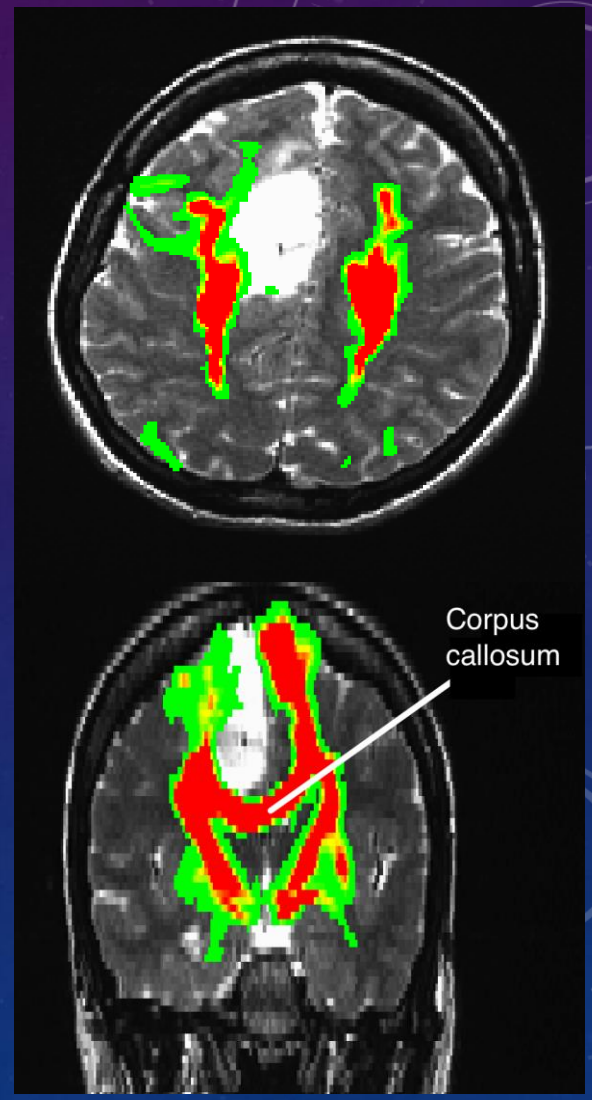


Image courtesy of
Dr Anders Eklund

SINCE I SHARED MY DATA

- People at Gent university, Belgium (Dr Daniele Marinazzo) have used the resting state data to look at functional connectivity between brain regions
- This has lead to a new collaboration (with student Hannelore Aerts) looking at network analysis for mapping and prediction of deficits post surgery

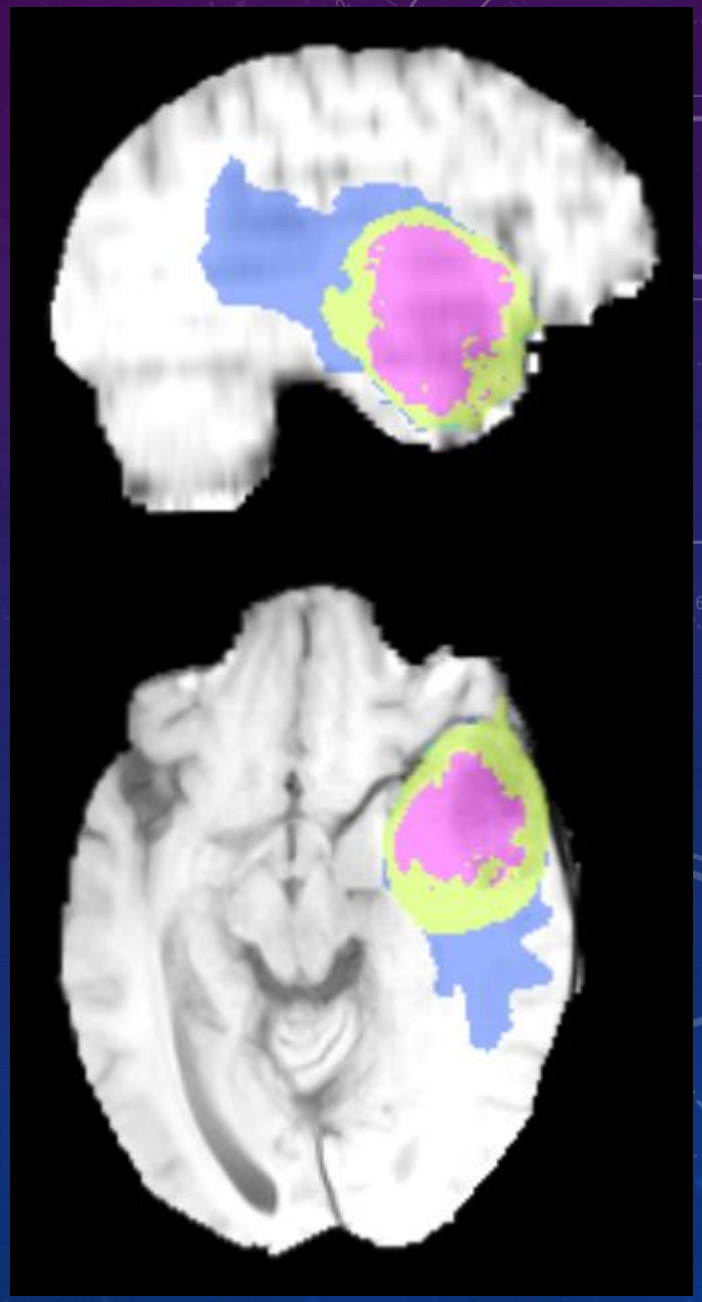
→ I couldn't do that

Image courtesy of Hannelore Aerts

SINCE I SHARED MY DATA

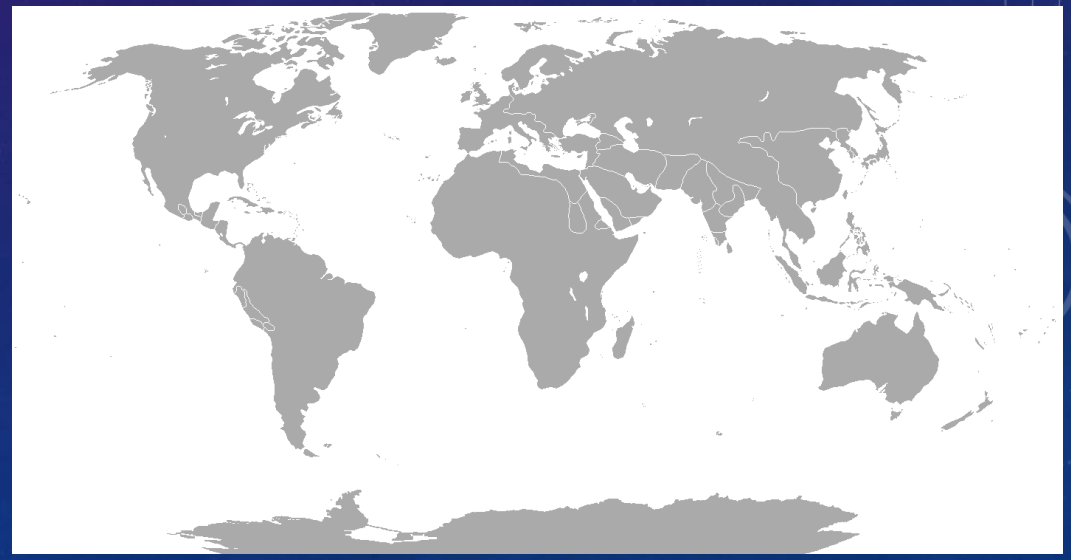
- People in Poland (SternMedia, Inc) have looks at the structural data
- Test of a generic algorithm for automated tumour segmentation and characterization (company working with NHS)

→ I couldn’t do that



KNOWING WHAT PEOPLE DO WITH MY DATA

- Dr Marinazzo (Belgium) was looking for such data, and I pointed him to the repo. People in Poland (SternMedia, Inc) were in contact with NHS who then contacted me, and again and I pointed them to the repo.
- Dr Eklund (Sweden), contacted me for some extra details and that's how I learned about his work with my data.
- In general, I think it would be useful to have repositories tracking for depositors who/where data go, useful for impact measures (and ego)



MAKING A DIFFERENCE WITH DATA

- Data sharing allows new methods to be developed at low cost
- Data sharing maximises research outputs (e.g. analyse data I could not) that can benefit patients
- Increase reproducibility and replicability, which in turns save resources to target robust results for patient treatments
- Facilitates meta-analyses and cumulative evidence for better diagnoses and treatments